FIG.1

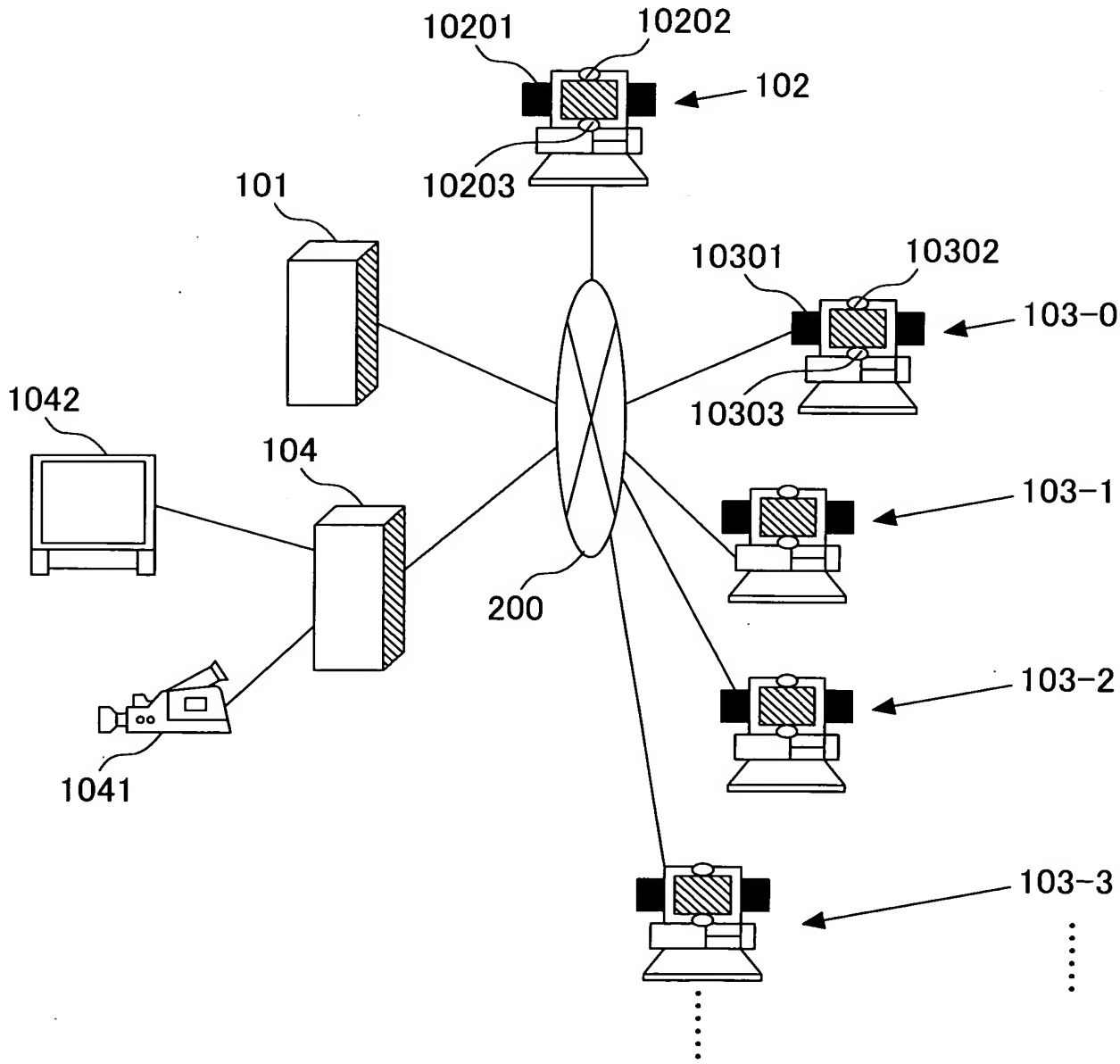
10201
10202
102
10203
101
10301
10302
103-0
10303
1042
104
103-1
200
103-2
1041
103-3

FIG.2

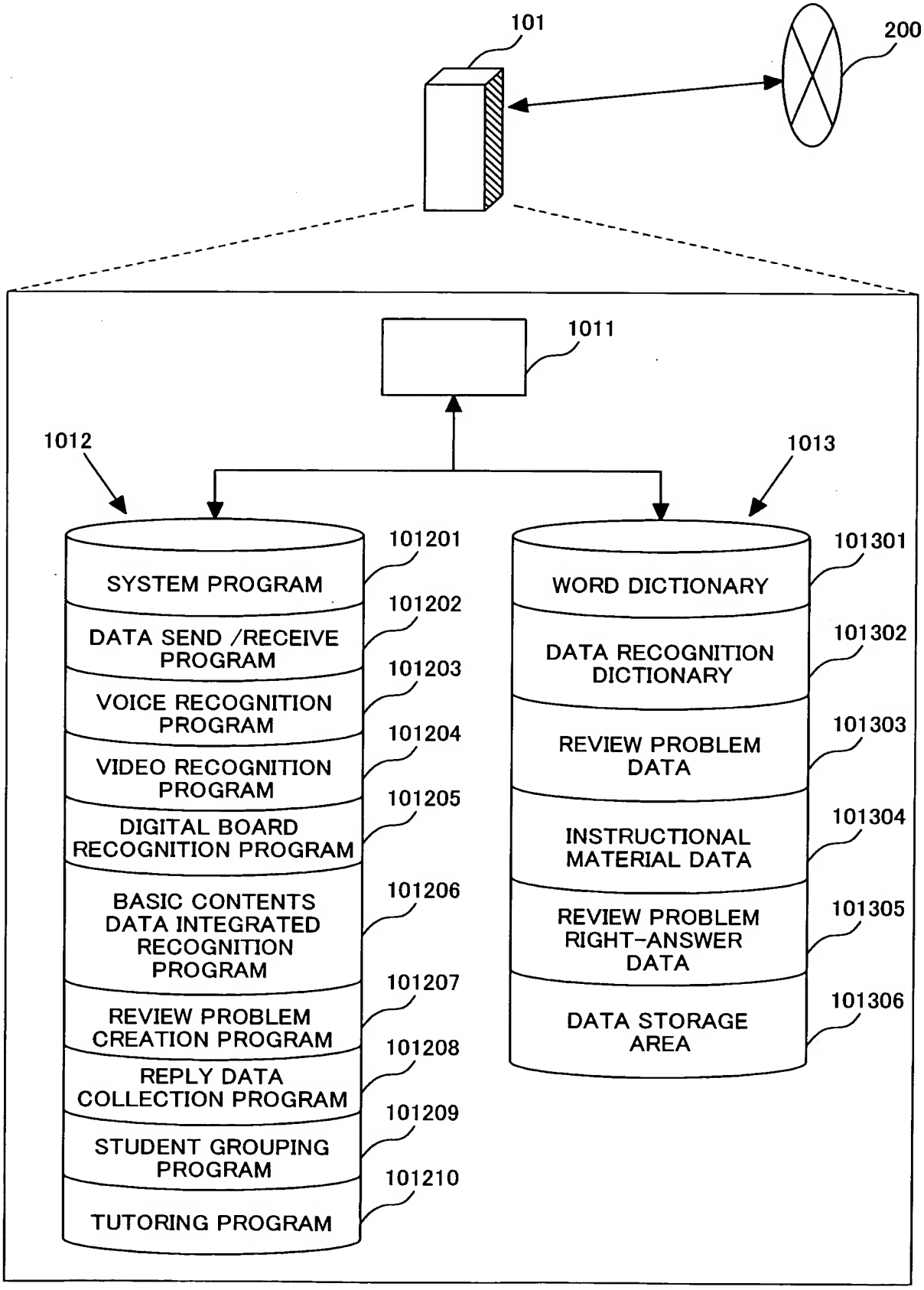
101
200
1011
1012
1013
101201
SYSTEM PROGRAM
101202
DATA SEND /RECEIVE PROGRAM
101203
VOICE RECOGNITION PROGRAM
101204
VIDEO RECOGNITION PROGRAM
101205
DIGITAL BOARD RECOGNITION PROGRAM
101206
BASIC CONTENTS DATA INTEGRATED RECOGNITION PROGRAM
101207
REVIEW PROBLEM CREATION PROGRAM
101208
REPLY DATA COLLECTION PROGRAM
101209
STUDENT GROUPING PROGRAM
101210
TUTORING PROGRAM
101301
WORD DICTIONARY
101302
DATA RECOGNITION DICTIONARY
101303
REVIEW PROBLEM DATA
101304
INSTRUCTIONAL MATERIAL DATA
101305
REVIEW PROBLEM RIGHT-ANSWER DATA
101306
DATA STORAGE AREA

FIG.3

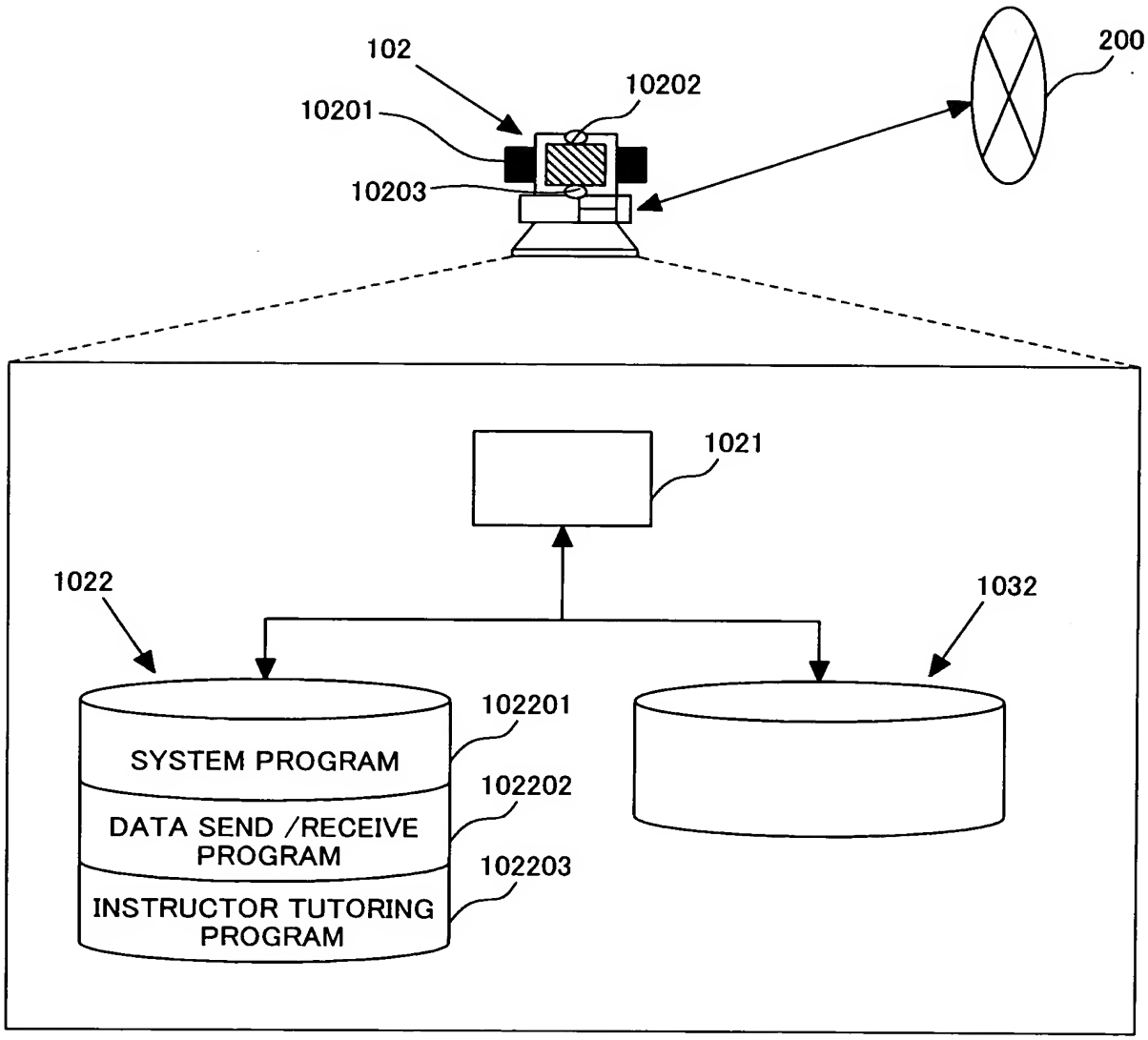
102
10202
10201
10203
200
1021
1022
1032
102201
SYSTEM PROGRAM
102202
DATA SEND /RECEIVE PROGRAM
102203
INSTRUCTOR TUTORING PROGRAM

FIG.4

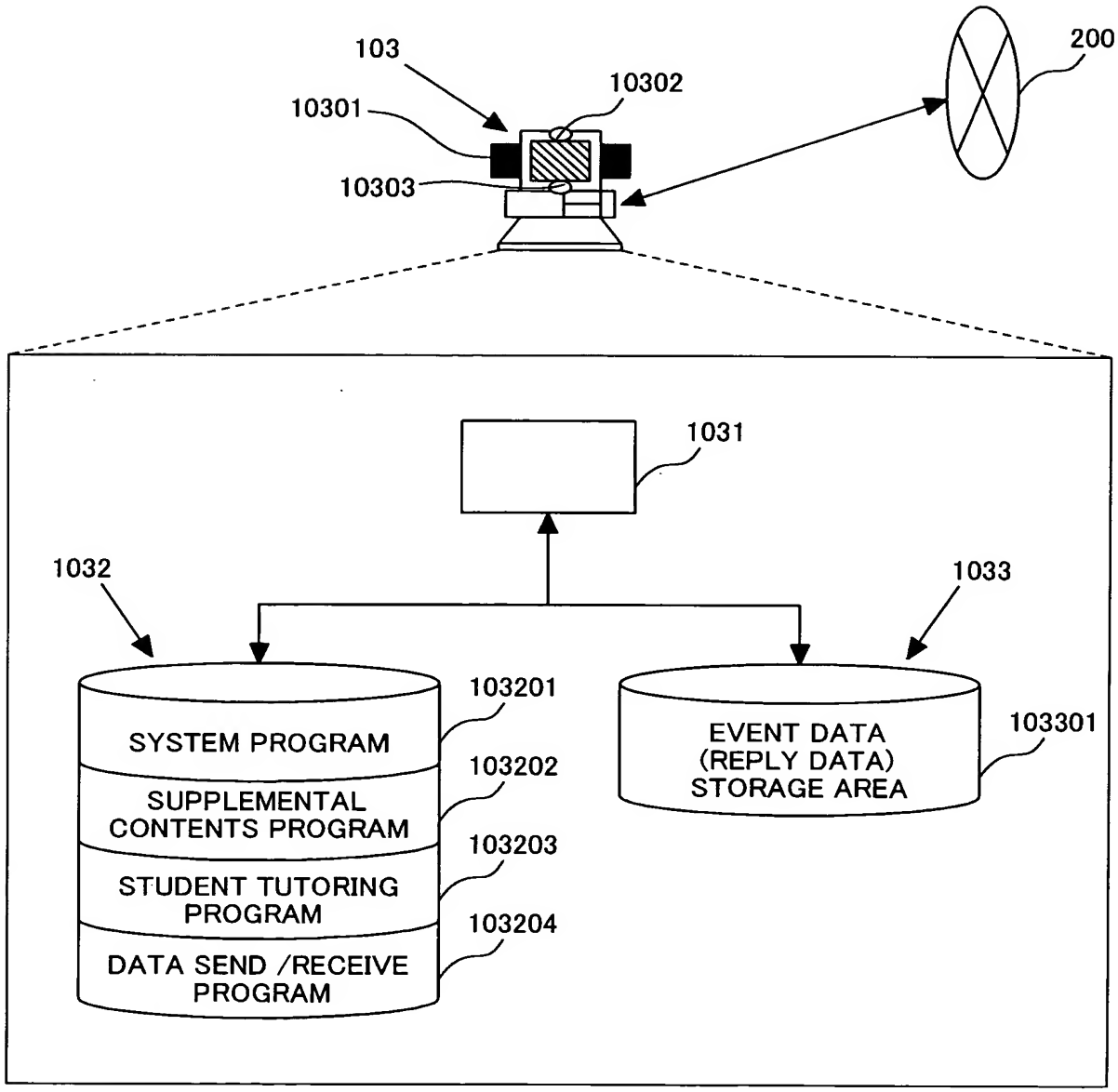
103
10302
10301
10303
200
1031
1032
1033
103201
SYSTEM PROGRAM
103202
SUPPLEMENTAL CONTENTS PROGRAM
103203
STUDENT TUTORING PROGRAM
103204
DATA SEND /RECEIVE PROGRAM
EVENT DATA (REPLY DATA) STORAGE AREA
103301

FIG.5

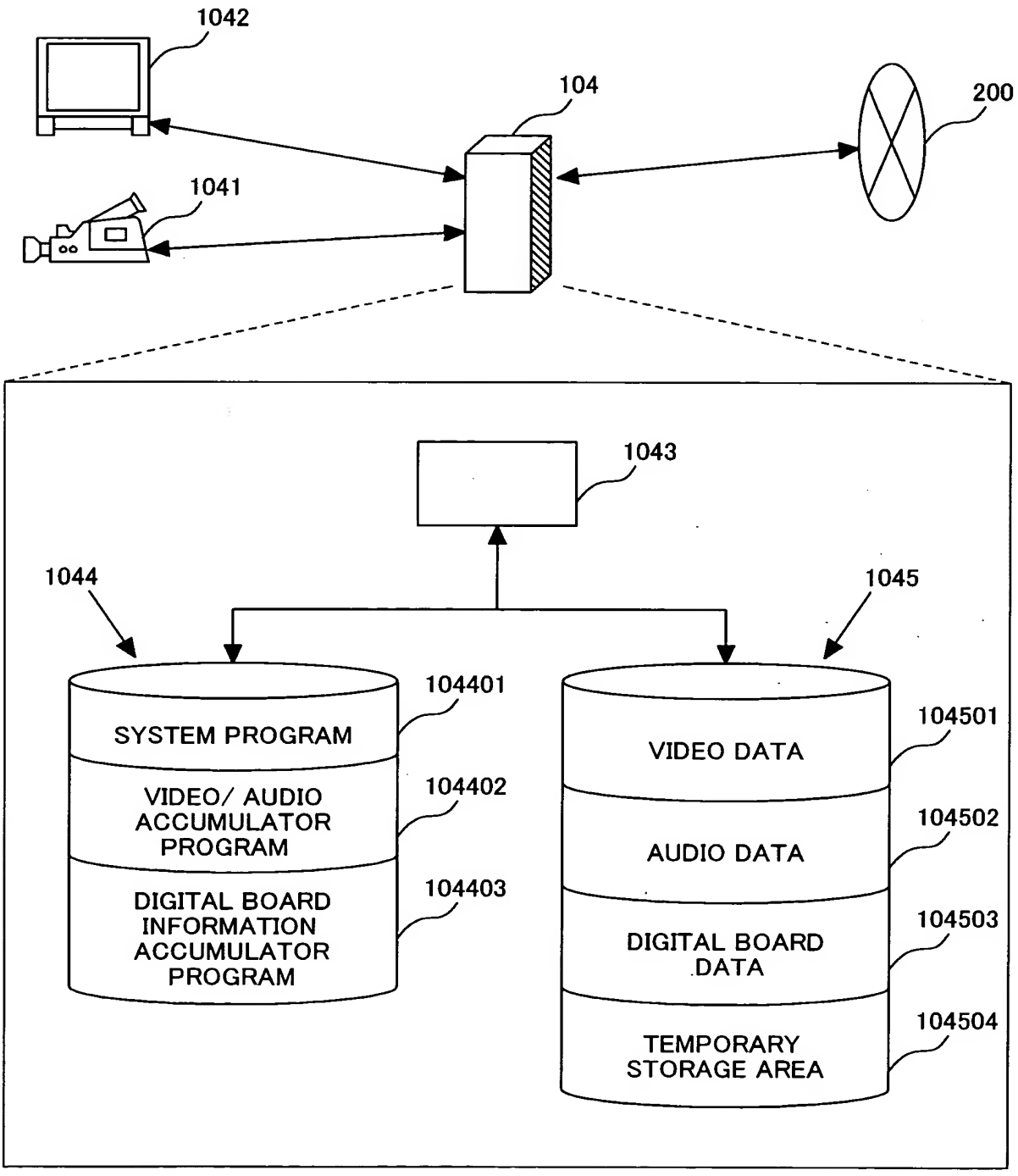
1042
104
200
1041
1043
1044
1045
104401
SYSTEM PROGRAM
104402
VIDEO/ AUDIO ACCUMULATOR PROGRAM
104403
DIGITAL BOARD INFORMATION ACCUMULATOR PROGRAM
104501
VIDEO DATA
104502
AUDIO DATA
104503
DIGITAL BOARD DATA
104504
TEMPORARY STORAGE AREA

FIG.6

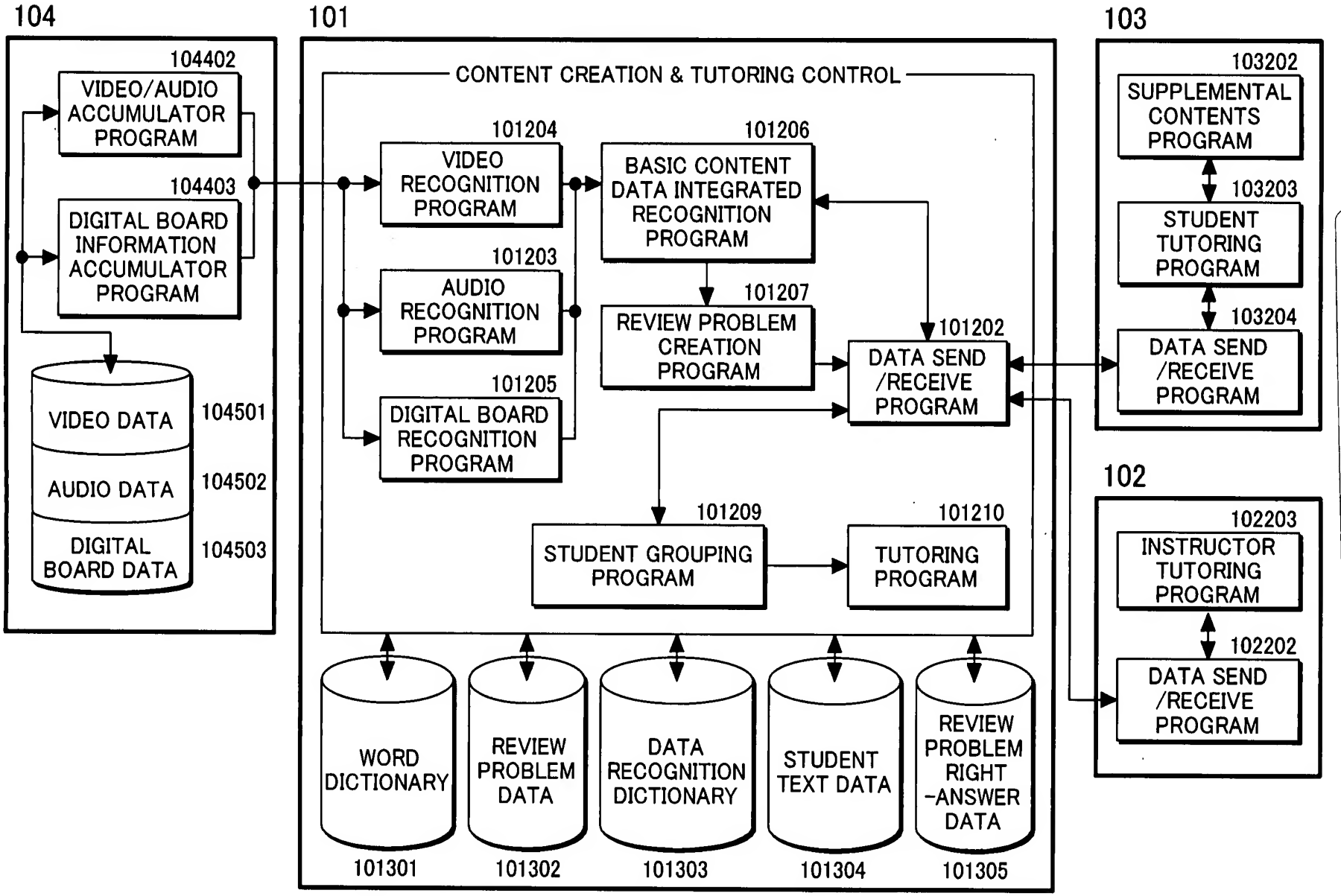
104
104402
VIDEO/AUDIO ACCUMULATOR PROGRAM
104403
DIGITAL BOARD INFORMATION ACCUMULATOR PROGRAM
VIDEO DATA
104501
AUDIO DATA
104502
DIGITAL BOARD DATA
104503
101
CONTENT CREATION & TUTORING CONTROL
101204
VIDEO RECOGNITION PROGRAM
101206
BASIC CONTENT DATA INTEGRATED RECOGNITION PROGRAM
101203
AUDIO RECOGNITION PROGRAM
101207
REVIEW PROBLEM CREATION PROGRAM
101205
DIGITAL BOARD RECOGNITION PROGRAM
101202
DATA SEND /RECEIVE PROGRAM
101209
STUDENT GROUPING PROGRAM
101210
TUTORING PROGRAM
WORD DICTIONARY
REVIEW PROBLEM DATA
DATA RECOGNITION DICTIONARY
STUDENT TEXT DATA
REVIEW PROBLEM RIGHT -ANSWER DATA
101301
101302
101303
101304
101305
103
103202
SUPPLEMENTAL CONTENTS PROGRAM
103203
STUDENT TUTORING PROGRAM
103204
DATA SEND /RECEIVE PROGRAM
102
102203
INSTRUCTOR TUTORING PROGRAM
102202
DATA SEND /RECEIVE PROGRAM

FIG.7

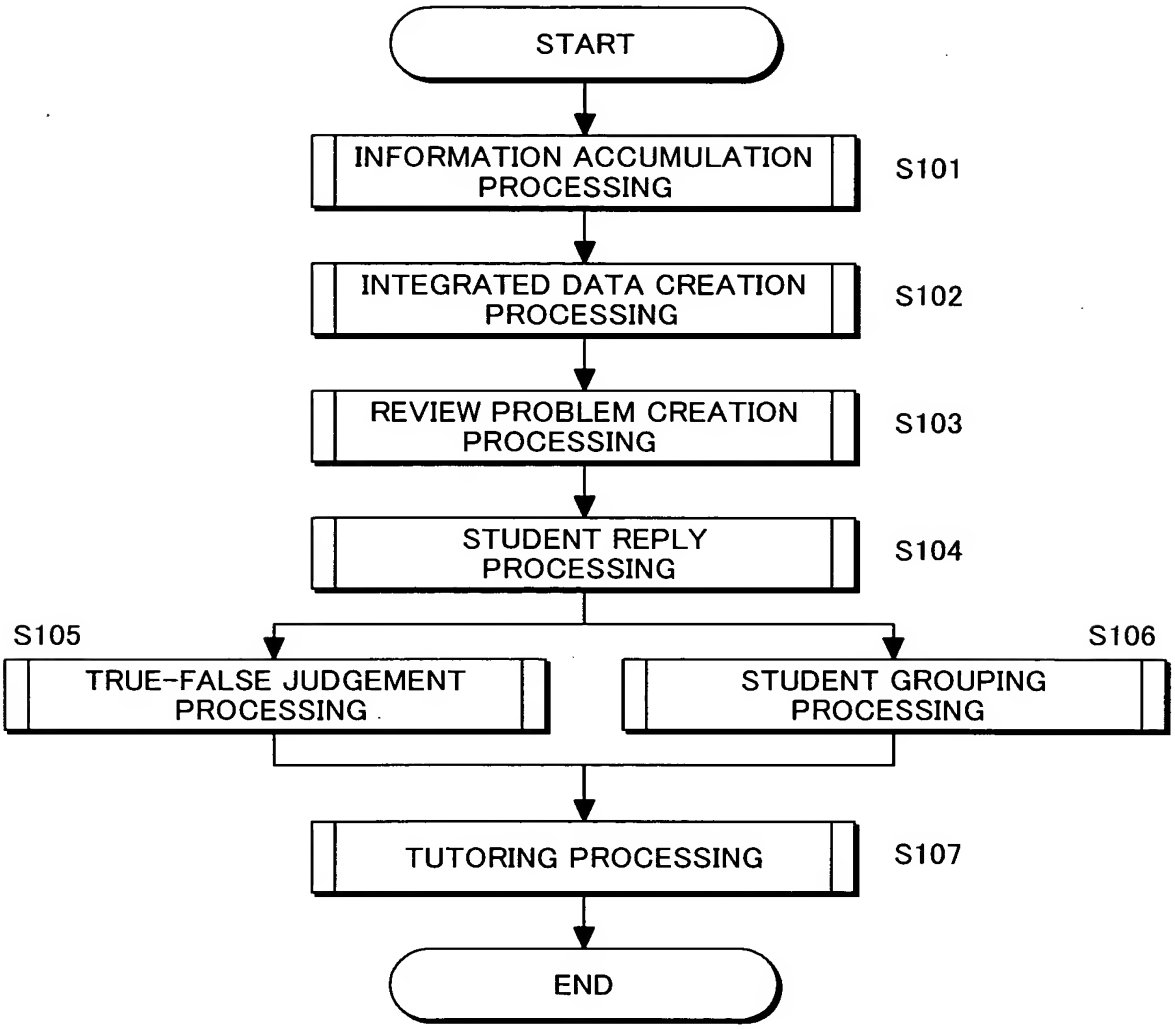
START
INFORMATION ACCUMULATION PROCESSING
S101
INTEGRATED DATA CREATION PROCESSING
S102
REVIEW PROBLEM CREATION PROCESSING
S103
STUDENT REPLY PROCESSING
S104
S105
TRUE-FALSE JUDGEMENT PROCESSING
S106
STUDENT GROUPING PROCESSING
TUTORING PROCESSING
S107
END

FIG.8

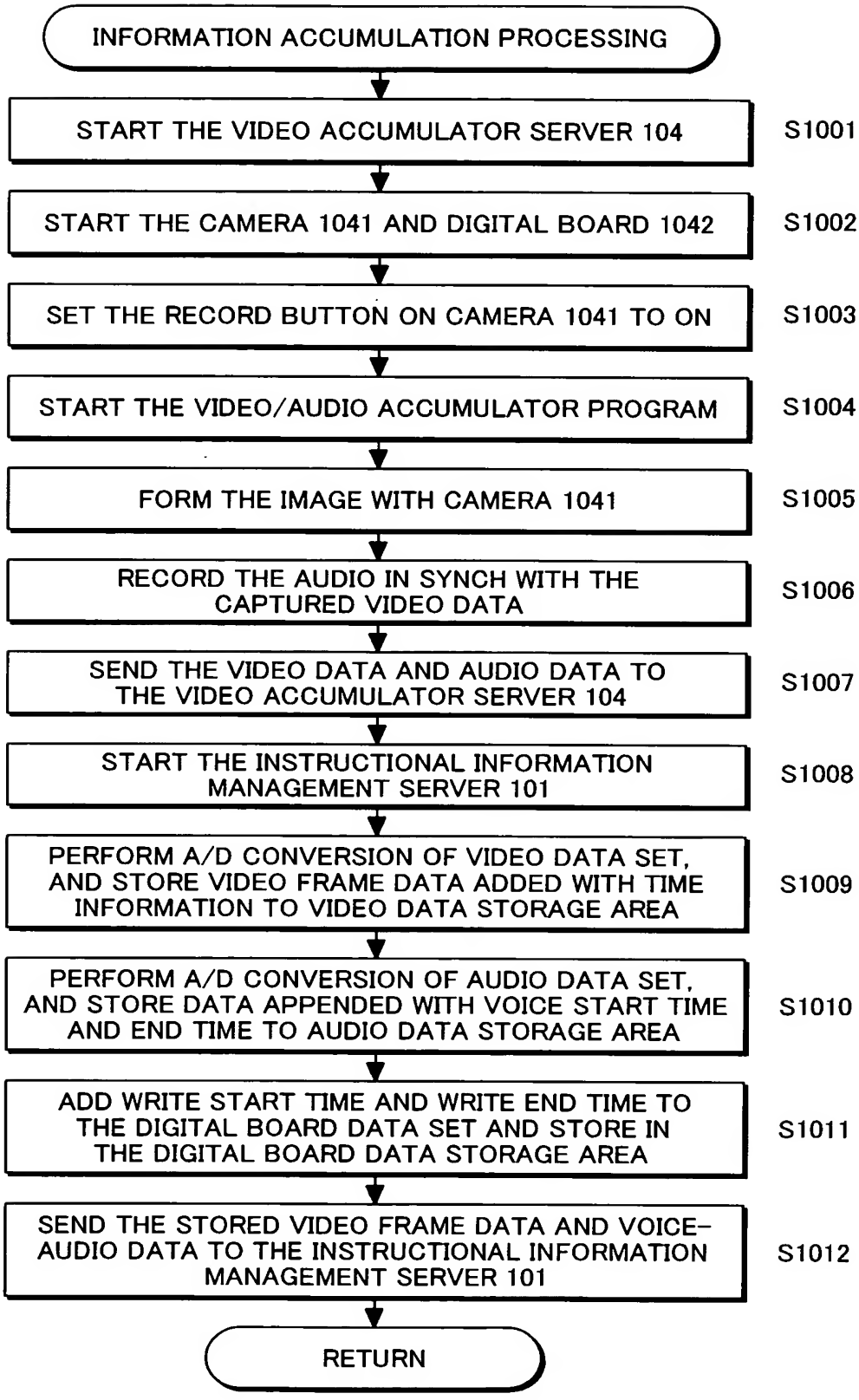
INFORMATION ACCUMULATION PROCESSING
START THE VIDEO ACCUMULATOR SERVER 104
S1001
START THE CAMERA 1041 AND DIGITAL BOARD 1042
S1002
SET THE RECORD BUTTON ON CAMERA 1041 TO ON
S1003
START THE VIDEO/AUDIO ACCUMULATOR PROGRAM
S1004
FORM THE IMAGE WITH CAMERA 1041
S1005
RECORD THE AUDIO IN SYNCH WITH THE CAPTURED VIDEO DATA
S1006
SEND THE VIDEO DATA AND AUDIO DATA TO THE VIDEO ACCUMULATOR SERVER 104
S1007
START THE INSTRUCTIONAL INFORMATION MANAGEMENT SERVER 101
S1008
PERFORM A/D CONVERSION OF VIDEO DATA SET, AND STORE VIDEO FRAME DATA ADDED WITH TIME INFORMATION TO VIDEO DATA STORAGE AREA
S1009
PERFORM A/D CONVERSION OF AUDIO DATA SET, AND STORE DATA APPENDED WITH VOICE START TIME AND END TIME TO AUDIO DATA STORAGE AREA
S1010
ADD WRITE START TIME AND WRITE END TIME TO THE DIGITAL BOARD DATA SET AND STORE IN THE DIGITAL BOARD DATA STORAGE AREA
S1011
SEND THE STORED VIDEO FRAME DATA AND VOICE-AUDIO DATA TO THE INSTRUCTIONAL INFORMATION MANAGEMENT SERVER 101
S1012
RETURN

FIG.9

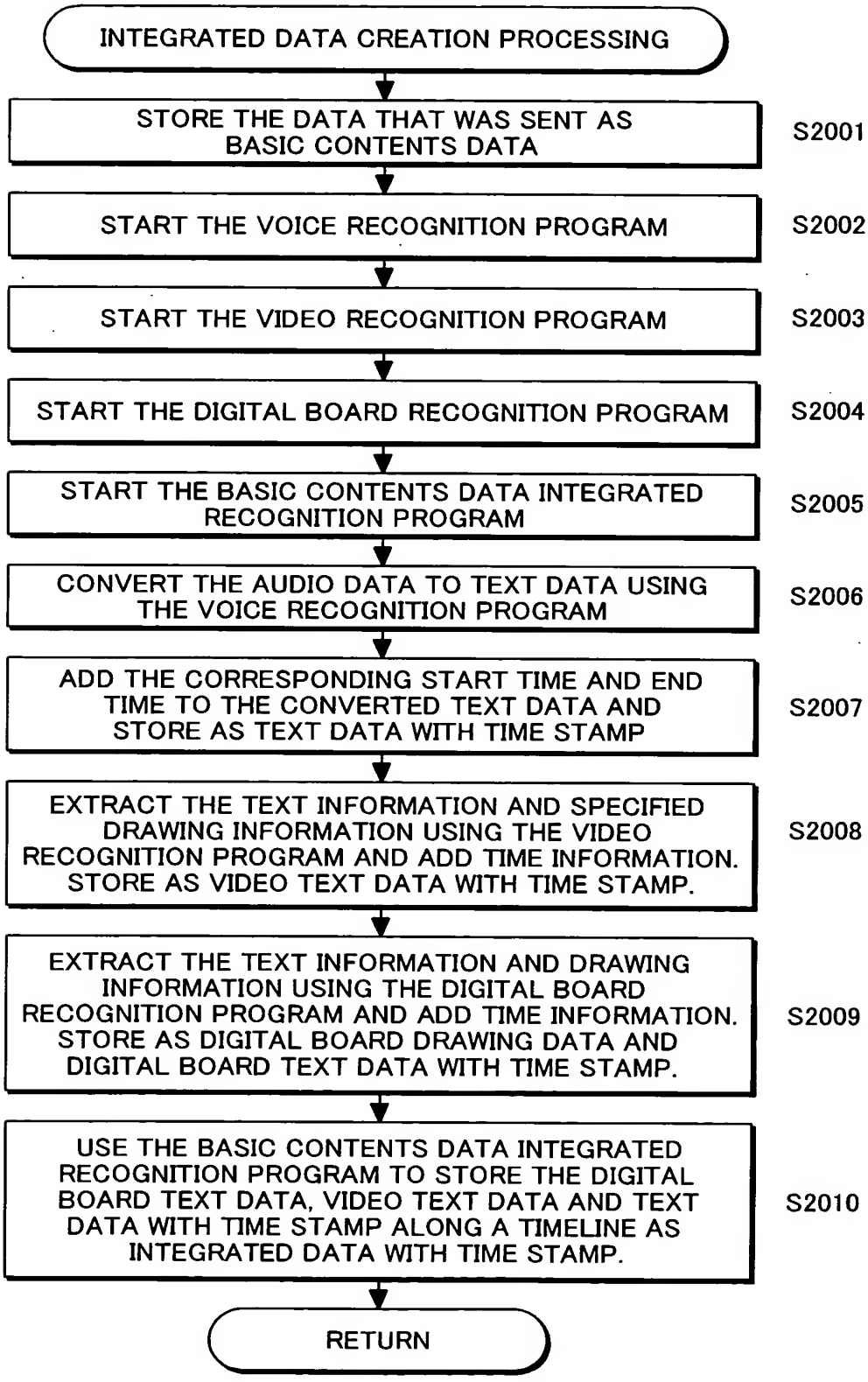
INTEGRATED DATA CREATION PROCESSING
STORE THE DATA THAT WAS SENT AS BASIC CONTENTS DATA
S2001
START THE VOICE RECOGNITION PROGRAM
S2002
START THE VIDEO RECOGNITION PROGRAM
S2003
START THE DIGITAL BOARD RECOGNITION PROGRAM
S2004
START THE BASIC CONTENTS DATA INTEGRATED RECOGNITION PROGRAM
S2005
CONVERT THE AUDIO DATA TO TEXT DATA USING THE VOICE RECOGNITION PROGRAM
S2006
ADD THE CORRESPONDING START TIME AND END TIME TO THE CONVERTED TEXT DATA AND STORE AS TEXT DATA WITH TIME STAMP
S2007
EXTRACT THE TEXT INFORMATION AND SPECIFIED DRAWING INFORMATION USING THE VIDEO RECOGNITION PROGRAM AND ADD TIME INFORMATION. STORE AS VIDEO TEXT DATA WITH TIME STAMP.
S2008
EXTRACT THE TEXT INFORMATION AND DRAWING INFORMATION USING THE DIGITAL BOARD RECOGNITION PROGRAM AND ADD TIME INFORMATION. STORE AS DIGITAL BOARD DRAWING DATA AND DIGITAL BOARD TEXT DATA WITH TIME STAMP.
S2009
USE THE BASIC CONTENTS DATA INTEGRATED RECOGNITION PROGRAM TO STORE THE DIGITAL BOARD TEXT DATA, VIDEO TEXT DATA AND TEXT DATA WITH TIME STAMP ALONG A TIMELINE AS INTEGRATED DATA WITH TIME STAMP.
S2010
RETURN

FIG.10

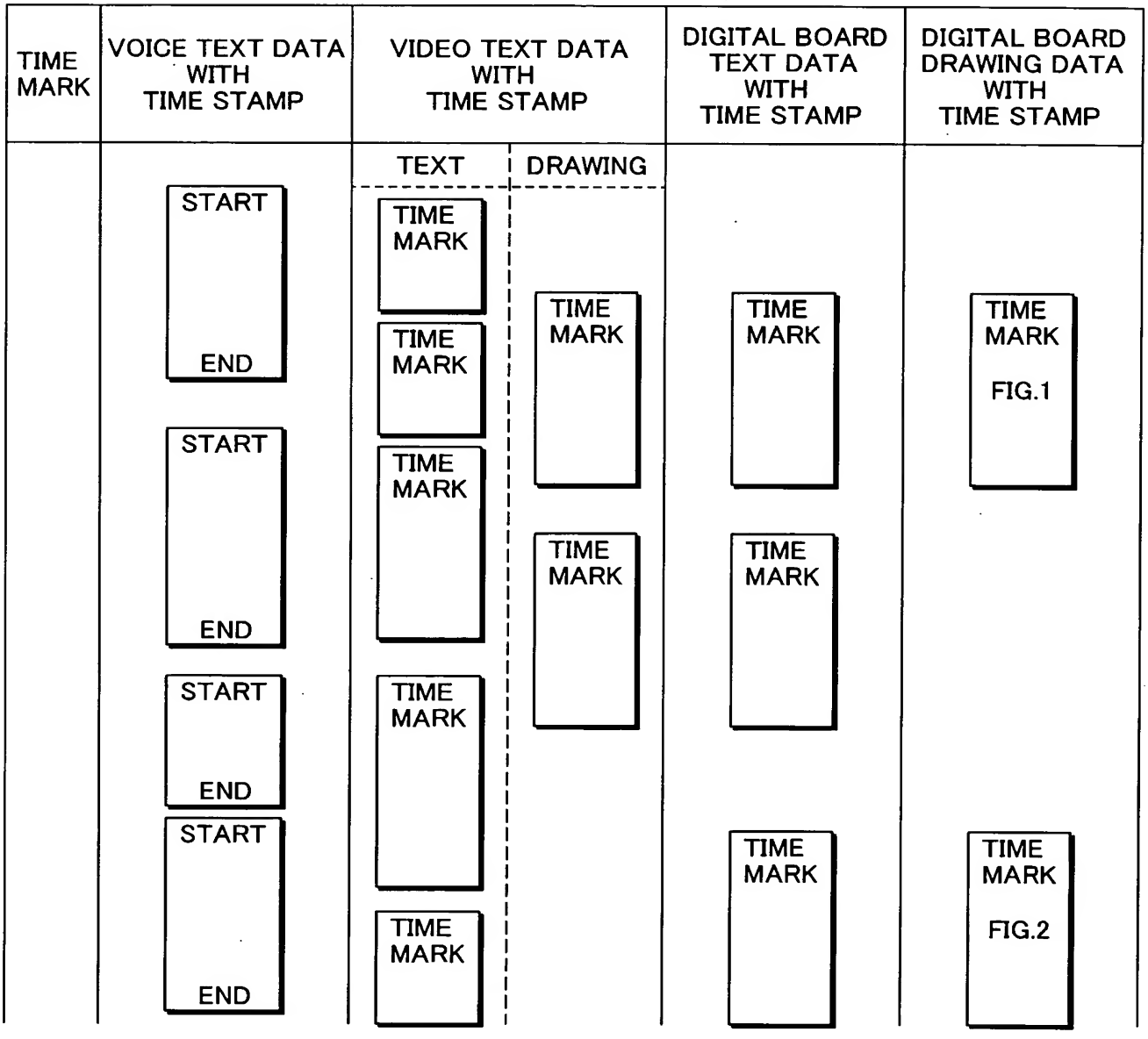
TIME MARK
VOICE TEXT DATA WITH TIME STAMP
VIDEO TEXT DATA WITH TIME STAMP
TEXT
DRAWING
DIGITAL BOARD TEXT DATA WITH TIME STAMP
DIGITAL BOARD DRAWING DATA WITH TIME STAMP
START
END
START
END
START
END
START
END
TIME MARK
TIME MARK
TIME MARK
TIME MARK
TIME MARK
TIME MARK
TIME MARK
TIME MARK
TIME MARK
TIME MARK
FIG.1
TIME MARK
TIME MARK
FIG.2

FIG.11

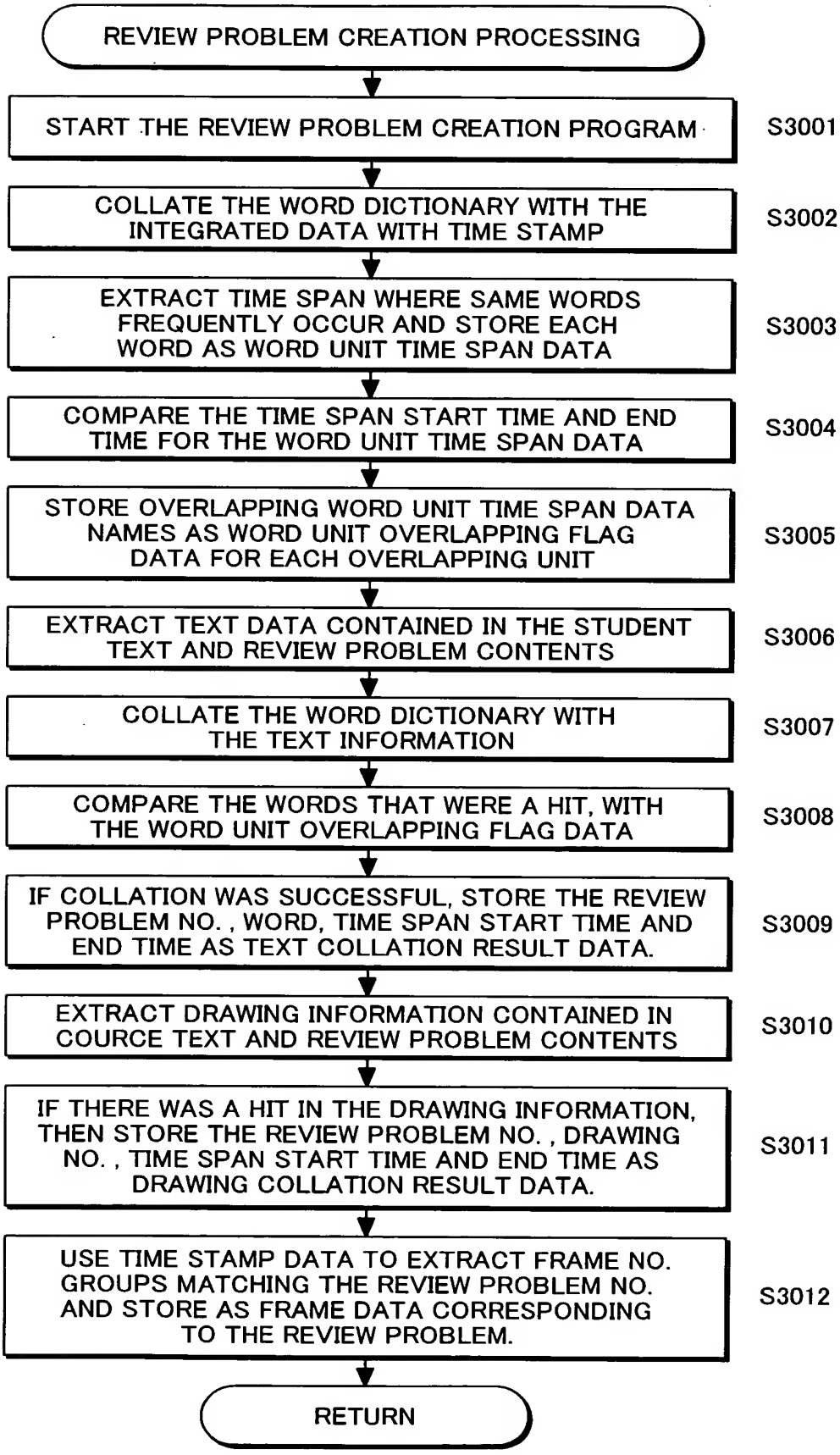
REVIEW PROBLEM CREATION PROCESSING
START THE REVIEW PROBLEM CREATION PROGRAM
S3001
COLLATE THE WORD DICTIONARY WITH THE INTEGRATED DATA WITH TIME STAMP
S3002
EXTRACT TIME SPAN WHERE SAME WORDS FREQUENTLY OCCUR AND STORE EACH WORD AS WORD UNIT TIME SPAN DATA
S3003
COMPARE THE TIME SPAN START TIME AND END TIME FOR THE WORD UNIT TIME SPAN DATA
S3004
STORE OVERLAPPING WORD UNIT TIME SPAN DATA NAMES AS WORD UNIT OVERLAPPING FLAG DATA FOR EACH OVERLAPPING UNIT
S3005
EXTRACT TEXT DATA CONTAINED IN THE STUDENT TEXT AND REVIEW PROBLEM CONTENTS
S3006
COLLATE THE WORD DICTIONARY WITH THE TEXT INFORMATION
S3007
COMPARE THE WORDS THAT WERE A HIT, WITH THE WORD UNIT OVERLAPPING FLAG DATA
S3008
IF COLLATION WAS SUCCESSFUL, STORE THE REVIEW PROBLEM NO., WORD, TIME SPAN START TIME AND END TIME AS TEXT COLLATION RESULT DATA.
S3009
EXTRACT DRAWING INFORMATION CONTAINED IN COURCE TEXT AND REVIEW PROBLEM CONTENTS
S3010
IF THERE WAS A HIT IN THE DRAWING INFORMATION, THEN STORE THE REVIEW PROBLEM NO., DRAWING NO., TIME SPAN START TIME AND END TIME AS DRAWING COLLATION RESULT DATA.
S3011
USE TIME STAMP DATA TO EXTRACT FRAME NO. GROUPS MATCHING THE REVIEW PROBLEM NO. AND STORE AS FRAME DATA CORRESPONDING TO THE REVIEW PROBLEM.
S3012
RETURN

FIG.12

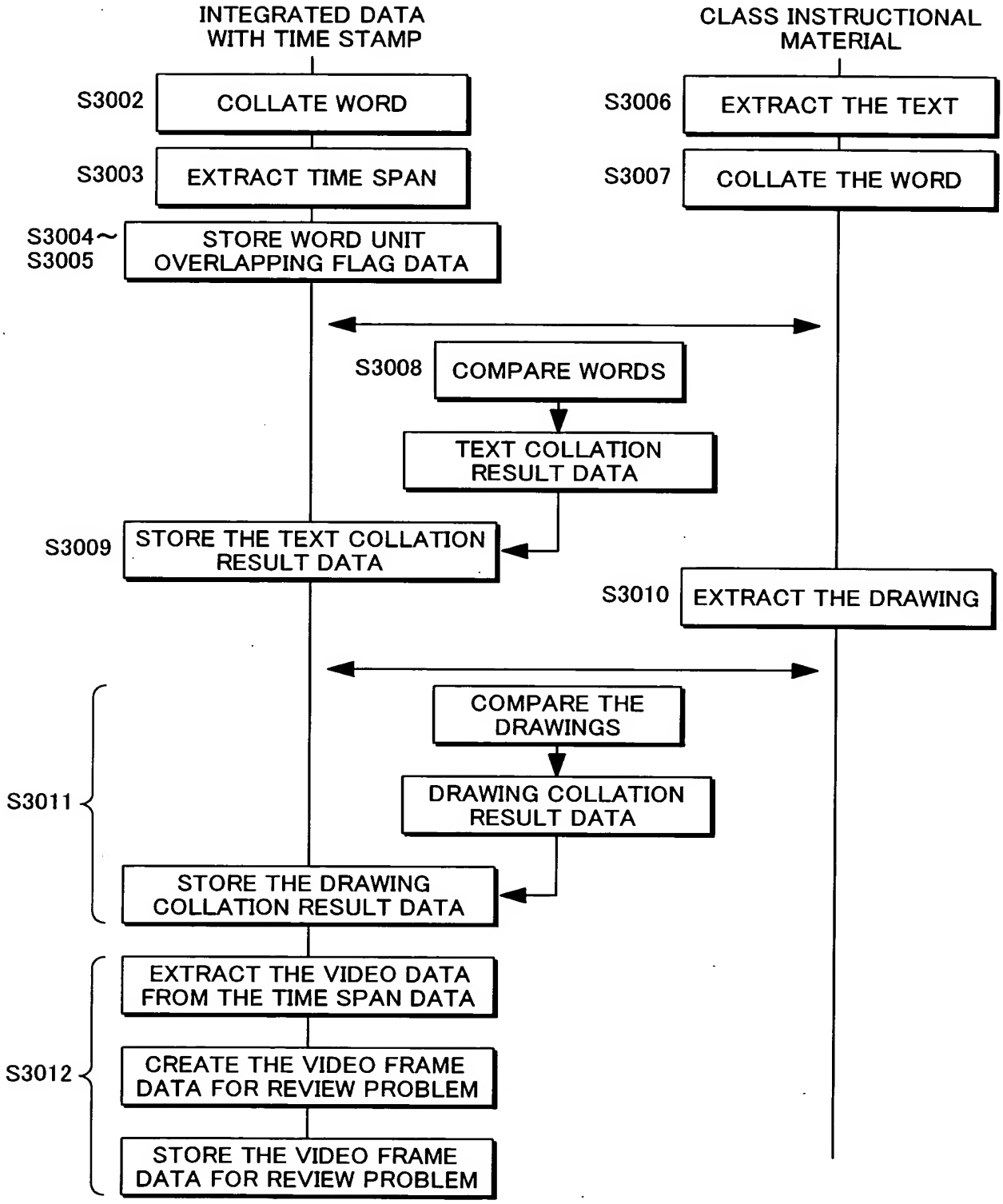
INTEGRATED DATA WITH TIME STAMP
CLASS INSTRUCTIONAL MATERIAL
S3002
COLLATE WORD
S3003
EXTRACT TIME SPAN
S3004~S3005
STORE WORD UNIT OVERLAPPING FLAG DATA
S3006
EXTRACT THE TEXT
S3007
COLLATE THE WORD
S3008
COMPARE WORDS
TEXT COLLATION RESULT DATA
S3009
STORE THE TEXT COLLATION RESULT DATA
S3010
EXTRACT THE DRAWING
S3011
COMPARE THE DRAWINGS
DRAWING COLLATION RESULT DATA
STORE THE DRAWING COLLATION RESULT DATA
S3012
EXTRACT THE VIDEO DATA FROM THE TIME SPAN DATA
CREATE THE VIDEO FRAME DATA FOR REVIEW PROBLEM
STORE THE VIDEO FRAME DATA FOR REVIEW PROBLEM

FIG.13

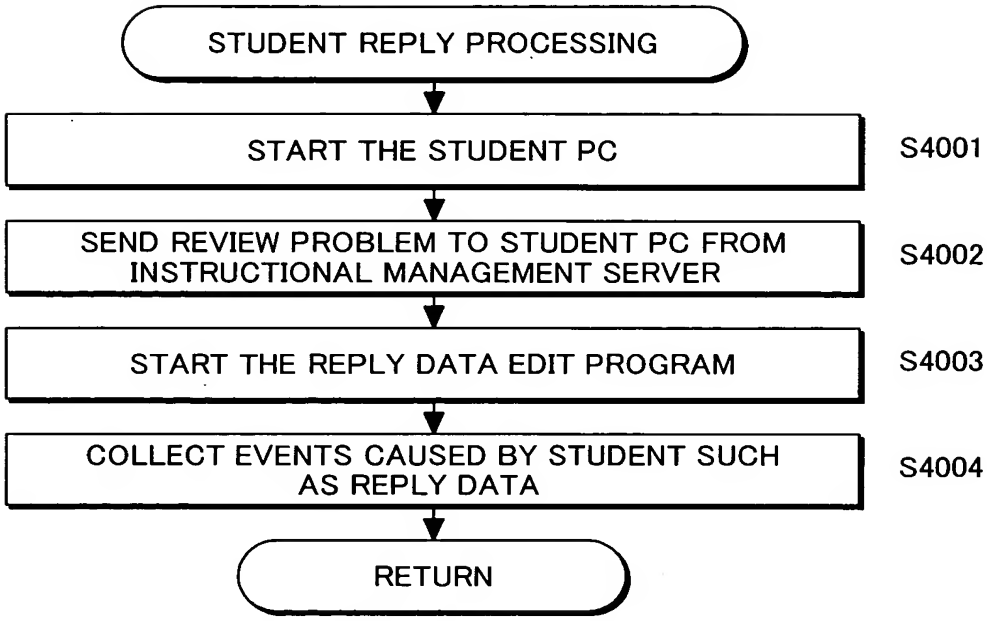
STUDENT REPLY PROCESSING
START THE STUDENT PC
S4001
SEND REVIEW PROBLEM TO STUDENT PC FROM INSTRUCTIONAL MANAGEMENT SERVER
S4002
START THE REPLY DATA EDIT PROGRAM
S4003
COLLECT EVENTS CAUSED BY STUDENT SUCH AS REPLY DATA
S4004
RETURN

FIG.14

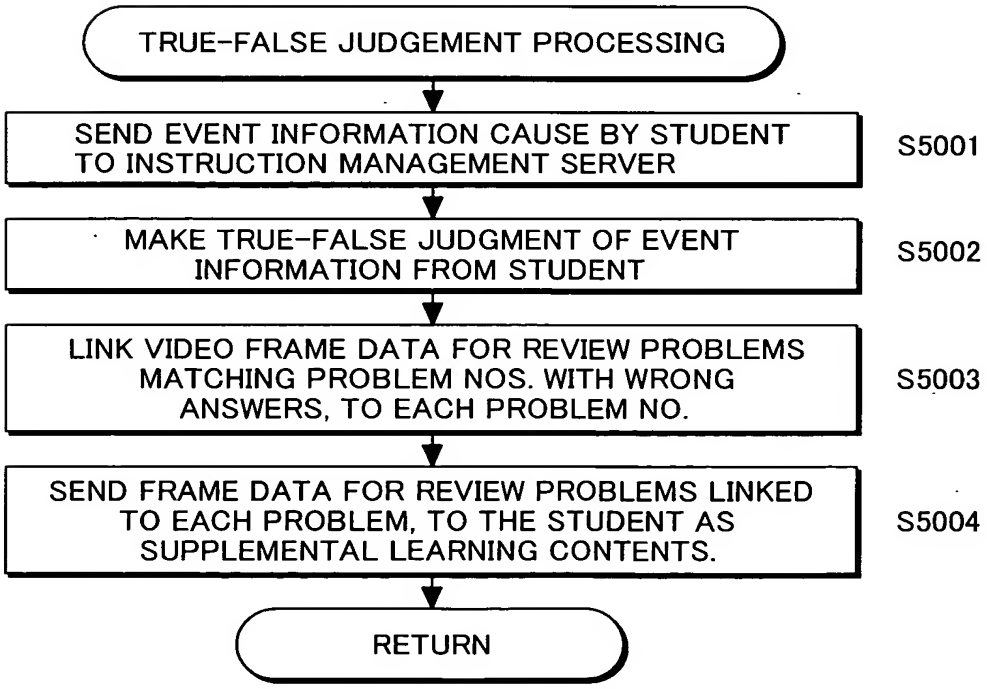
TRUE-FALSE JUDGEMENT PROCESSING
SEND EVENT INFORMATION CAUSE BY STUDENT TO INSTRUCTION MANAGEMENT SERVER
S5001
MAKE TRUE-FALSE JUDGMENT OF EVENT INFORMATION FROM STUDENT
S5002
LINK VIDEO FRAME DATA FOR REVIEW PROBLEMS MATCHING PROBLEM NOS. WITH WRONG ANSWERS, TO EACH PROBLEM NO.
S5003
SEND FRAME DATA FOR REVIEW PROBLEMS LINKED TO EACH PROBLEM, TO THE STUDENT AS SUPPLEMENTAL LEARNING CONTENTS.
S5004
RETURN

FIG.15

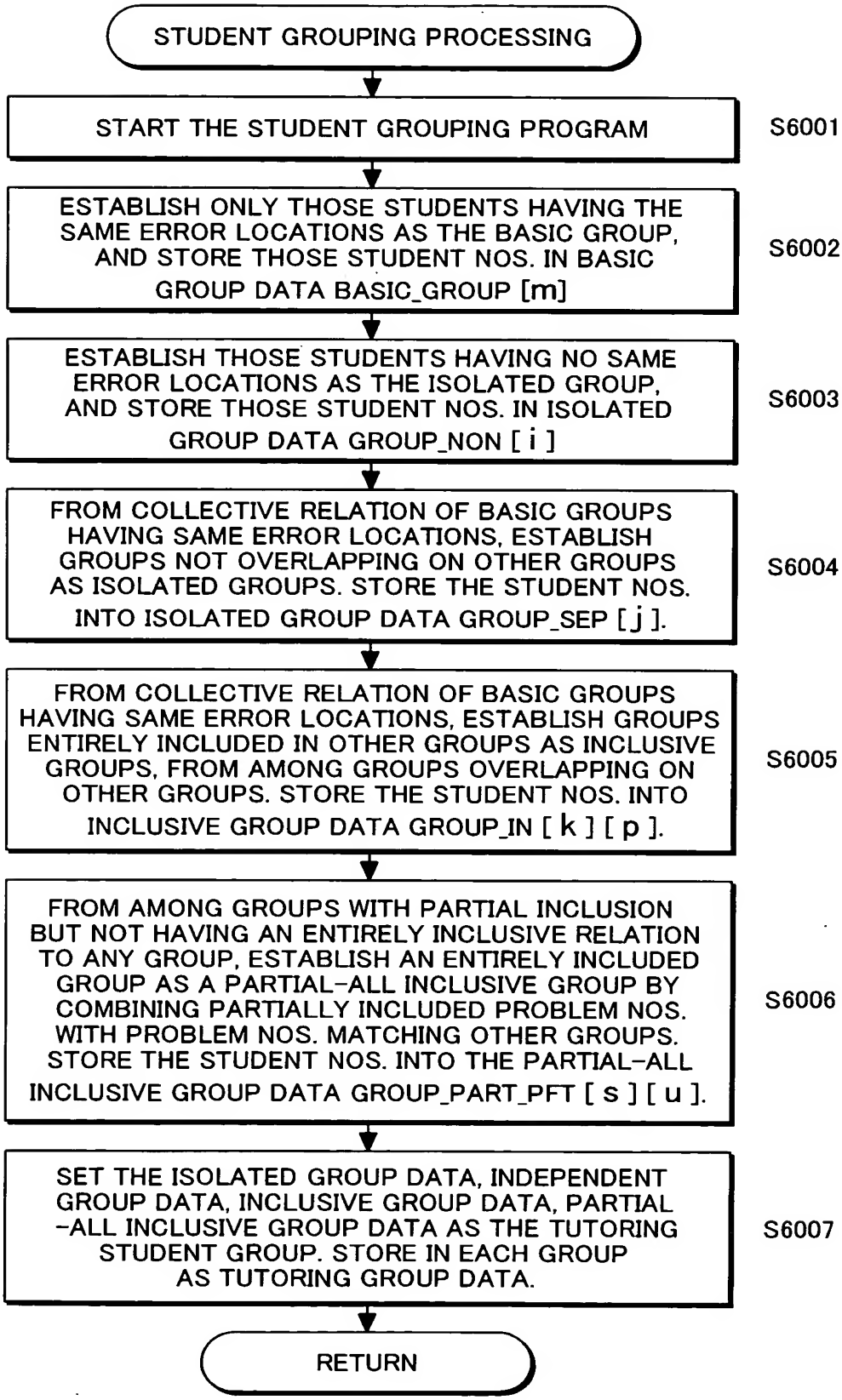
STUDENT GROUPING PROCESSING
START THE STUDENT GROUPING PROGRAM
S6001
ESTABLISH ONLY THOSE STUDENTS HAVING THE SAME ERROR LOCATIONS AS THE BASIC GROUP, AND STORE THOSE STUDENT NOS. IN BASIC GROUP DATA BASIC_GROUP [m]
S6002
ESTABLISH THOSE STUDENTS HAVING NO SAME ERROR LOCATIONS AS THE ISOLATED GROUP, AND STORE THOSE STUDENT NOS. IN ISOLATED GROUP DATA GROUP_NON [i]
S6003
FROM COLLECTIVE RELATION OF BASIC GROUPS HAVING SAME ERROR LOCATIONS, ESTABLISH GROUPS NOT OVERLAPPING ON OTHER GROUPS AS ISOLATED GROUPS. STORE THE STUDENT NOS. INTO ISOLATED GROUP DATA GROUP_SEP [j].
S6004
FROM COLLECTIVE RELATION OF BASIC GROUPS HAVING SAME ERROR LOCATIONS, ESTABLISH GROUPS ENTIRELY INCLUDED IN OTHER GROUPS AS INCLUSIVE GROUPS, FROM AMONG GROUPS OVERLAPPING ON OTHER GROUPS. STORE THE STUDENT NOS. INTO INCLUSIVE GROUP DATA GROUP_IN [k] [p].
S6005
FROM AMONG GROUPS WITH PARTIAL INCLUSION BUT NOT HAVING AN ENTIRELY INCLUSIVE RELATION TO ANY GROUP, ESTABLISH AN ENTIRELY INCLUDED GROUP AS A PARTIAL-ALL INCLUSIVE GROUP BY COMBINING PARTIALLY INCLUDED PROBLEM NOS. WITH PROBLEM NOS. MATCHING OTHER GROUPS. STORE THE STUDENT NOS. INTO THE PARTIAL-ALL INCLUSIVE GROUP DATA GROUP_PART_PFT [s] [u].
S6006
SET THE ISOLATED GROUP DATA, INDEPENDENT GROUP DATA, INCLUSIVE GROUP DATA, PARTIAL -ALL INCLUSIVE GROUP DATA AS THE TUTORING STUDENT GROUP. STORE IN EACH GROUP AS TUTORING GROUP DATA.
S6007
RETURN

FIG.16

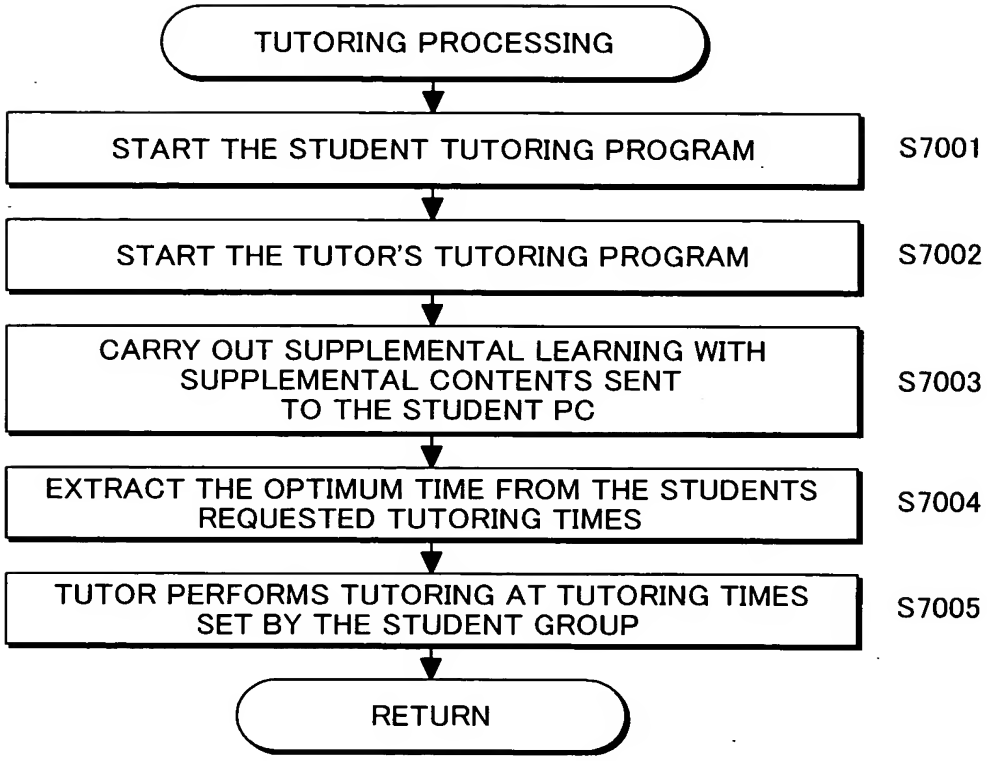
TUTORING PROCESSING
START THE STUDENT TUTORING PROGRAM
S7001
START THE TUTOR'S TUTORING PROGRAM
S7002
CARRY OUT SUPPLEMENTAL LEARNING WITH SUPPLEMENTAL CONTENTS SENT TO THE STUDENT PC
S7003
EXTRACT THE OPTIMUM TIME FROM THE STUDENTS REQUESTED TUTORING TIMES
S7004
TUTOR PERFORMS TUTORING AT TUTORING TIMES SET BY THE STUDENT GROUP
S7005
RETURN

FIG.17

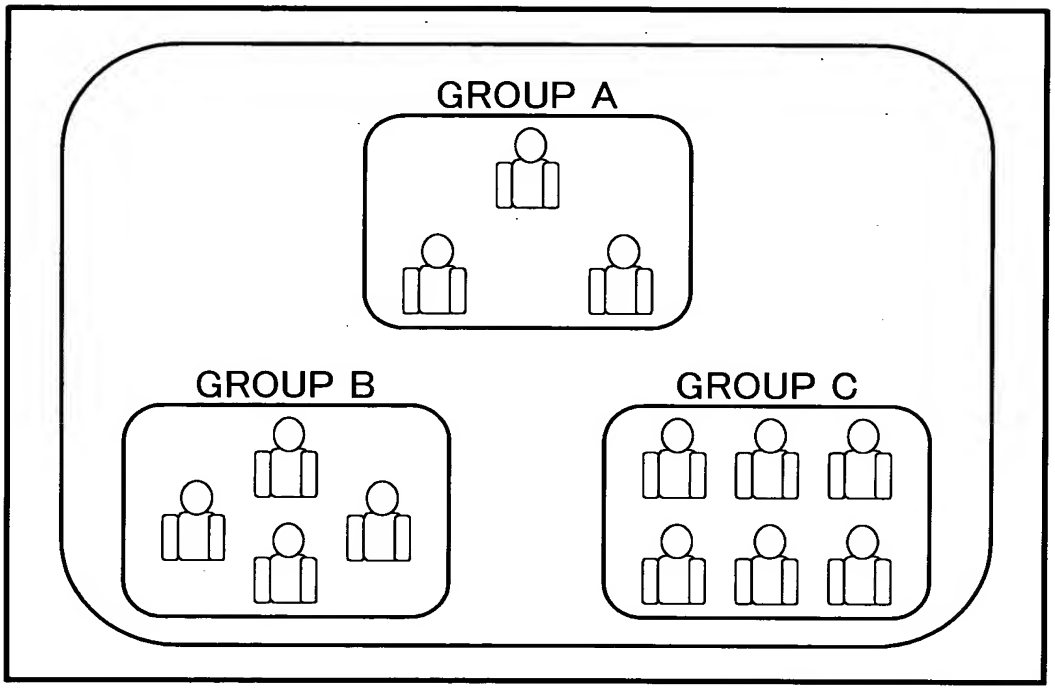

FIG.18